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MENTAL SCIENCE.

Brain and Sociability.

THIS is the title of an address delivered at the Congress of German Naturalists of this year, by Prof. Theodore Meynert, whose works on the nervous system have given him a world-wide reputation. Like much that he writes, it contains many digressions, and in particular enters into details concerning the nature of instinct. The portion of the address most germane to the title is reproduced in abstract here.¹

The struggle for existence has its origin in the tendency of organisms to multiply indefinitely. Sociability consists in the moderation of this strife; in the more or less conscious resolve of a certain portion of the animal kingdom to live and let live. The Hindoo philosophy attempts to embrace the entire animal world under such a law, but this is practically impossible. The Christian ideal of a single brotherhood of man is realizable, because it includes but one animal species. Such communities confined to one species, or still more frequently to one society, are to be seen in the animal world. The organized troops of elephants, the communities of ants and bees, illustrate it abundantly. With what kind of psychic or physiological activity to connect these manifestations is a question capable of various answers. One finds it difficult to draw the line separating the conscious from the unconscious, the designed from the instinctive, the voluntary from the reflex. It is somewhat less hopeless to arrange organisms by means of an anatomical comparison of their nervous systems. This would not coincide with the zoological scale throughout; for the *Amphioxus*, though a vertebrate, has almost no brain. By the classification here adopted, the ant and the bee would stand high in the scale. In man the cortical organ is situated to one side, the reflex organs to the other side, of the base of the cranium; and the ganglia furnishing communication with the organs of sense are between. In the same way in the invertebrates the ganglia anterior to the œsophageal arch are subordinate to those posterior: they play the rôle of higher and lower brain, and have the same significance as voluntary and reflex action have in the vertebrates. In the ants, according to Forel, the greater the intelligence of the animal, the more developed are these ganglia. Passing upward from the leech to the water-beetle (*Dytiscus*), to the ant, one passes from a nervous system in which the inferior cerebral ganglia are larger than the superior, to one in which they are equal, to one in which the superior gains the ascendancy. Forel finds among ants that these ganglia are much reduced in the incapable males, a little larger in the females, and well developed in the workers. While consciousness need not be exclusively connected with these anterior ganglia, their high development eclipses the powers of the lower centres; and this seems to be the more perfect the greater the excess of the superior over the inferior ganglia.

The methods by which the sociability is retained among animal communities, — the power of communication, the power of recognition of friends and enemies, the selection of a single queen so that there shall be unity in the government, — all this need not detain us here. The point to be noted is the type of sociability represented by an insect community, — a sociability limited in its scope, but within that limit rendering the struggle for existence less keen. An ant of another species is treated as an enemy: degree of resemblance determines communism. Sympathy is not developed among the lower animals. Nutrition is the prime object of each. The most common dependence of one animal form upon another is parasitism. Parasites have been divided into those that do not feed upon the animal itself but take its nutriment, those that make return for what they take, and parasites proper. Parasitism in general is the anti-social characteristic both in animals and men. Its most perfect expression is 'slavery'; while 'reciprocity,' 'mutualism,' is the essence of all sociability, and is the ideal towards which civilization is striving.

From this general point of view the enemy of sociability among human communities, that is crime, is nothing but a form of parasitism. This it is that binds together criminals of all grades and nations. It is a lack of the true social instinct. In the natural development of the child, one can distinguish two *egos*. The primi-

tive *ego* is formed by the consensus of sense-impressions, the motions, the pleasures and pains, yielded by its environment; and its activity is directed to the preservation of itself. Upon this is built a second *ego*, which, however, is not limited, like the earlier. It unites the individual to other men: it makes one share the life of all. It founds societies, and is the true germ of 'mutualism.' It contributes its activity to the general welfare of all. This wide scope of the secondary *ego* is gained by an increase of intense cerebral work. Its motives of action become so complex and so many, that the mind can no longer contain them. It brings about an ethical, a social feeling, that prevents what is harmful to the community, and opposes it.

The deprivation of a moral sense would thus be a kind of imbecility. It is a deficiency in the secondary *ego*; it reduces an individual to the stage of childhood in which self-preservation is the only end. The criminal retains the parasitic nature of his infancy, feels his life to be different from those of his kindred, and is thus excluded from the sentiment of sociability except towards those like himself. In as far as this is a mal-direction, and not an absence, of the moral sense, it is subject to reformatory measures. Other forms of anti-social psychic conditions exist, such as mania and the entertainment of delusions. One can follow the mechanism of sociability into the brain. The anterior portions of the brain exercise a control over the lower centres, — those connected with the exercise of sense and the individual functions. The anterior brain, then, can be regarded as the organ of sociability. Its development increases the sense of 'mutualism.' The superiority of the lower centres brings about the anti-social characteristics. Here are centred the parasitical, purely personal tendencies.

NOTES AND NEWS.

THE growth of the electrical industry in a direction in which less has been done, perhaps, than in some others, is shown by the formation of the Anglo-American Electric Light Manufacturing Company of this city, for the manufacture of a storage-battery which they believe to have many merits. It is claimed that the accumulator they are making requires no washing-out from the time it is started till it is ready to be thrown aside; that it will last five years, which is guaranteed by the company; that it will yield 90 to 92 per cent of the current put into it; that it will not buckle or break; and that it requires no expert attendance. We hope to publish a description of the battery, with illustrations, at an early date.

— In *The Critic* of Dec. 15, Mr. O. B. Bunce has an article on 'Christmas Books,' in which he ascribes the greatest activity in the bookstores during the holiday season to the purchase of children's books, of the works of poets, essayists, romancists, and historians, of Bibles, prayer-books, hymn-books, and albums, and of numerous miscellaneous selections; the gay and sumptuous volumes, which occupy so large a place on the counters, which have been produced at such great cost and with so much watchful care, filling but a small part in the general bustle.

— We learn from *The Electrical Review* that an electrical locomotive is building at the New York Locomotive Works, in Rome, N.Y. The engine is to be operated solely by electricity, and is designed to run on all roads where steam is now used. It will weigh fifteen tons, and when turned out of the shop will be an exact counterpart of an ordinary locomotive, though considerably smaller and lighter. When finished, an electrician from New York will take charge of it, and place in it the electrical apparatus to be used as a motive power. The inventor is W. H. Darling of Brooklyn.

— Recent experiments with a submarine boat, 'Le Gymnote,' made at Toulon, have been very successful. The boat moves horizontally as well as vertically, and is easily kept at any depth that is desired. It can be run at a speed of from nine to ten knots. The light is good, and respiration easy. Its crew is ordinarily three, but during the experiments five persons were on board. *The Revue Scientifique* says that the new boat, an invention of Mr. Krebs, is a complete success, and will become of the greatest importance in marine warfare.